

COMPACT AND EFFICIENT THREE DIMENSIONAL ANTENNAS

ABSTRACT

1 A volumetrically compact and efficient antenna, with a
2 high radiation resistance and low losses, that can be
3 designed for any frequency, and which has a gain within 1
4 dB of that of a full-sized vertical monopole radiator or,
5 in its horizontally polarized form, within 2 dB of that
6 of a horizontally polarized half-wave dipole. One
7 embodiment is a rectangle, with short radiators and long
8 interconnecting wires, which has been folded back on
9 itself in a manner that results in a square configuration
10 (when viewed from the top) and brings the two radiating
11 wires into close proximity. Only a single port need be
12 fed. Linear loading sections, such as stubs, serrations
13 and helically wound interconnecting wires can be used to
14 electrically lengthen the antenna, while keeping physical
15 dimensions small. Capacitive loading sections are also
16 used. Two unequal-sized rectangular loops may be joined
17 onto each other, to provide an additional radiating
18 element.